Meningioma en plaque of the sphenoid ridge

En plaque meningiomas characteristically lead to slowly increasing proptosis with the eye angled downward. Much of this is due to reactive orbital hyperostosis. With invasion of the tumor into the orbit, diplopia is common.

Sphenoid wing (SW) en plaque meningioma (ePM) is a subgroup of meningiomas defined by its specific character presenting with a rather thin sheath of soft tumor tissue accompanied by disproportionate and extensive bone hyperostosis. ePMs may occur anywhere along the central nervous system (CNS) [1) 2)].

All the involved bone should be removed to prevent recurrence. In those cases with involvement of the cavernous sinus and/or the orbital apex, a subtotal but extensive removal combined with bony decompression of the cranial nerves at the superior orbital fissure and optic canal frequently produces good functional and cosmetic results [3)].

Hyperostosis of the sphenoid ridge or convexity of the skull associated with meningioma en plaque (MEP) is often confused with other hyperostosing conditions, such as fibrous dysplasia or osteoma.

CT features that were characteristic or suggestive of MEP, included periosteal pattern of hyperostosis, inward bulging of the vault lesion, surface irregularity of the hyperostotic bone, and intracranial changes. The role of CT in evaluating MEP.

High-resolution CT is the neuroimaging method of choice in evaluating MEP [4)].

Case series

2015

Sphenoid wing meningiomas extending to the orbit (ePMSW) are currently removed through several transcranial approaches.

Tthe largest surgical cohort of hyperostosing ePMSW with the longest follow up period is provided by Amirjamshidi et al.

88 cases of ePMSW with a mean follow up period of 136.4 months. The impact of preoperative variables upon different outcome measures is evaluated. Standard pterional craniotomy was performed in 12 patients (C) while the other 76 cases underwent the proposed modified lateral miniorbitotomy (LO).

There were 31 men and 57 women. The age range varied between 12 and 70 years. Patients presented with unilateral exophthalmos (Uex) ranging between 3 and 16 mm. Duration of proptosis before operation varied between 6 months and 16 years. The status of visual acuity (VA) prior to operation was: no light perception (NLP) in 16, light perception (LP) up to 0.2 in 3, 0.3-0.5 in 22, 0.6-0.9 in 24, and full vision in 23 patients. Postoperatively, acceptable cosmetic appearance of the eyes was seen in 38 cases and in 46 mild inequality of < 2 mm was detected. Four cases had mild enophthalmos (En). Among those who had the worst VA, two improved and one became almost blind after operation. The cases with VA in the range of 0.3-0.5 improved. Among those with good VA (0.5

to full vision), 2 became blind, vision diminished in 10, and improved or remained full in the other 35 cases. Tumor recurrence occurred in 33.3% of group C and 10.5% of group LO (P = 0.05). The major determinant of tumor regrowth was the technique of LO (P = 0.008).

Using LO technique, the risky corners involved by the tumor is visualized from the latero-inferior side rather than from the latero-superior avenue. This is the crucial milestone to achieve aggressive removal of all the involved compartments of the lesion. Satisfactory cosmetic result is reported using mini LO technique after widely exposing and removing the hyperostotic bone down to the subtemporal fossa with only simple repair of the dura without cranioplasty [5].

1997

A report of two women who underwent surgery for radical resection, outcome was excellent seven and eight years after surgery. The removal of such osseous sphenoidal lesions has always been accompanied by high rates of morbidity, mortality and recurrence. With new surgical approaches and greater exposure of the skull base, interest is again being directed toward complete resection of these rare tumors, which involve scarce intradural but extensive bone invasion [6].

1982

Thirty-three patients with en plaque, 9 with en masse (but with extensive bone involvement), and 7 with recurrent hyperostosing meningiomas of the sphenoid ridge were operated on. All patients underwent large extradural resection of the base of the skull as well as extirpation of the intradural tumors or adjacent plaques. The periorbita was involved in 13 patients (26.5%). Seventeen patients (34.7%) needed reconstruction of the base of the skull. This was achieved with autogenous bone grafts. In all but 3 patients, invasion of the bone by meningiomatous tissue was demonstrated histologically. Operative mortality was 4%. Total removal was possible in 91% of the patients with meningiomas located at the pterion or middle third of the sphenoid ridge. More difficult was the total removal of meningiomas of the inner third or of the entire sphenoid ridge (47%). However, long-term results have proved to be satisfying. Early surgical therapy should always be considered as the treatment of choice for such meningiomas [7].

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